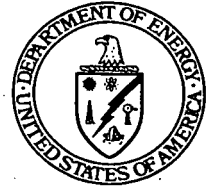




Department of Energy

Ohio Field Office Fernald Area Office

P. O. Box 538705
Cincinnati, Ohio 45253-8705
(513) 648-3155



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SEP 15 1999

Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-1120-99

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Mr. Val Orr
Division of Drinking and Ground Waters - UIC Unit
P.O. Box 1049
1800 Watermark Drive
Columbus, Ohio 43216-1049

Dear Mr. Saric, Mr. Schneider, and Mr. Orr:

JUNE 1999 OPERATING REPORT FOR THE RE-INJECTION DEMONSTRATION

This correspondence submits the Re-Injection Demonstration Operation Report for the month of June 1999.

As specified in the Re-Injection Demonstration Test Plan, monthly operating reports for the re-injection demonstration are to be prepared and submitted to the U.S. Environmental Protection Agency (U.S. EPA), Ohio Environmental Protection Agency (OEPA) Office of Federal Facilities Oversight, and the OEPA Division of Drinking and Ground Waters-UIC Unit.

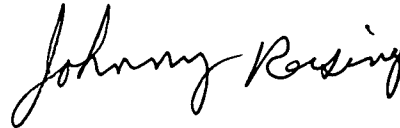
Mr. James A. Saric
Mr. Tom Schneider
Mr. Val Orr

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SEP 15 1999

If you have any questions regarding this submittal, please contact Robert J. Janke at (513) 648-3149.

Sincerely,



Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:R.J. Janke

Enclosure

cc w/enclosure:

G. Jablonowski, USEPA-V, SRF-5J

M. R. Rochotte, OEPA-Columbus

T. Schneider, OEPA-Dayton (three copies of enclosure)

F. Bell, ATSDR

M. Schupe, HSI GeoTrans

R. Vandegrift, ODH

F. Barker, Tetra Tech

AR Coordinator, FDF/78

cc w/o enclosure:

N. Hallein, EM-42/CLOV

A. Tanner, OH/FEMP

D. Brettschneider, FDF/52-5

K. Broberg, FDF/52-5

D. Carr, FDF/52-2

T. Hagen, FDF/65-2

J. Harmon, FDF/90

W. Hertel, FDF/52-5

R. Heck, FDF/2

S. Hinnefeld, FDF/31

T. Walsh, FDF/65-2

ECDC, FDF/52-7

MONTHLY OPERATING REPORT
RE-INJECTION DEMONSTRATION
JUNE 1999

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OVERVIEW

The FEMP Re-Injection Demonstration began on September 2, 1998. The controlling document for the Re-Injection Demonstration is the Re-Injection Demonstration Test Plan, Rev. 0. A requirement of Section 6 of the test plan is that monthly operating reports be submitted to the U.S. EPA, Ohio EPA Office of Federal Facilities Oversight, and the Division of Ohio EPA Drinking and Ground Waters-UIC Unit. The monthly operating reports are to include the following information:

- I. Analysis of the injectate
- II. The volume and rate of re-injection
- III. A description of any well maintenance and rehabilitation procedures which were conducted
- IV. Results of groundwater monitoring at the re-injection test site.

This report serves to fulfill this commitment for the month of June 1999. It covers operation of the Re-Injection Demonstration from June 1, 1999 through July 1, 1999.

ANALYSIS OF THE INJECTATE

Groundwater which is being extracted from the Great Miami Aquifer is being treated for uranium and re-injected back into the Great Miami Aquifer. The groundwater is being treated in the FEMP Advanced Waste Water Treatment (AWWT) Expansion Facility. The effluent from the AWWT Expansion Facility is being sampled monthly for the parameters listed in Table 2.1 of the Re-Injection Demonstration Test Plan, Rev. 0. Monthly injectate sampling is focusing on the final remediation level (FRL) constituents that have had an exceedance of their FRL in the area of the aquifer from which the groundwater is being pumped. The monthly injectate samples are being sent to an off-site laboratory for analysis.

Preliminary results from the injectate sample collected in June are provided in Table 1. A review of the preliminary data from June indicates that all of the constituent concentrations with the exception of Bis(2-ethylhexyl)phthalate are below their respective FRLs. The FRL for Bis(2-ethylhexyl)phthalate is 6 µg/L. The concentration of Bis(2-ethylhexyl)phthalate in the June injectate sample was 8 µg/L. This is the first time that the concentration of Bis(2-ethylhexyl)phthalate in an injectate sample has exceeded

the groundwater FRL. DOE confirmed that the value was reported correctly by the lab. However the lab result was qualified with a "B" which indicates Bis(2-ethylhexyl)phthalate was also found in the blank sample. Bis(2-ethylhexyl)phthalate is a common lab contaminant that comes from plastic. It appears that the Bis(2-ethylhexyl)phthalate concentration measured in the sample is not representative of the injectate water, and the organic was somehow introduced to the sample during the sampling or analytical process. It is anticipated that the concentration of Bis(2-ethylhexyl)phthalate measured in the July injectate sample will be below the groundwater FRL.

VOLUME AND RATE OF RE-INJECTION

Treated groundwater is being re-injected into the Great Miami Aquifer in five re-injection wells at a rate of 200 gallons per minute per well. Figure 1 illustrates the location of the five re-injection wells. Re-Injection Well 8 is an 8-inch diameter well. Re-Injection Well 9 is a 12-inch diameter well. The other re-injection wells are all 16 inches in diameter. The combined design re-injection rate for all five wells is 1000 gallons per minute. Operational data specific to each re-injection well are provided in Tables 2 through 6.

Figure 2 illustrates the water level rise in each of the five re-injection wells from June 1, 1999 through July 1, 1999, as measured by the operators at the AWWT Expansion Facility Distributed Control System (DCS). Water levels are recorded three times per day. Water levels inside the re-injection wells are monitored as an indicator of plugging within the wells. As a well screen becomes plugged, the water level in the well rises to compensate for the greater pressure needed to maintain a constant re-injection rate.

While it is not the intent of this report to discuss operational efficiency issues, the following information is provided to aid in the interpretation of Figure 2. All of the re-injection wells were down for 8 hours on June 11 (sample number 850) due to an electrical storm.

WELL MAINTENANCE AND REHABILITATION

No well maintenance or rehabilitation work was required or performed on the five re-injection wells during the month of June.

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GROUNDWATER MONITORING RESULTS

Water quality samples for the Re-Injection demonstration are collected quarterly and analyzed for major anions, cations, and total uranium. The first round of water quality data was collected in August 1998, prior to the start of re-injection. Results of the August sampling event were reported in the September monthly report. The second round of water quality samples was collected in December 1998. Results of the December sampling event were reported in the January monthly report. The third round of water quality samples for the re-injection demonstration was collected in March 1999. Results of the March sampling event were reported in the April monthly report. The fourth round of sampling will be collected during the months of June through August. At the end of the one-year Re-Injection Demonstration, the water quality data collected quarterly during the demonstration will be used to illustrate water quality conditions over the course of the demonstration.

TABLE 1

ANALYSIS OF INJECTATE - PRELIMINARY RESULTS
Sample Collected June 14, 1999

Constituents ^a	Result ^b	Groundwater FRL ^c	Detection Limit	Constituent Type ^e	Basis for FRL ^f
General Chemistry		mg/L			
Nitrate	0.67	11.0		MP	B
Inorganics		mg/L			
Antimony	U	0.006	0.005	N	A
Arsenic	U	0.05	0.0033	N	A
Barium	0.054	2.0		N	A
Beryllium	U	0.004	0.003	N	A
Cadmium	U	0.014	0.003	N	B
Total Chromium	U	0.022 ^d	0.0005	MP	R
Cobalt	U	0.17	0.0017	N	R
Lead	U	0.015	0.0021	N	A
Manganese	0.0031	0.9		N	B
Mercury	U	0.002	0.0001	MP	A
Nickel	U	0.1	0.0008	N	A
Selenium	U	0.05	0.0029	N	A
Silver	U	0.05	0.002	N	R
Vanadium	U	0.038	0.0009	N	R
Zinc	0.0079 B	0.021		N	B
Radionuclides		pCi/L			
Neptunium-237	U	1.0	-0.0406	MP	R*
Radium-226	U	20.0	0.504	N	A
Strontium-90	U	8.0	0.277	MP	A
Thorium-228	U	4.0	-0.0681	N	R*
Thorium-232	U	1.2	-0.00764	N	R*
		µg/L			
Total Uranium	10.3	20.0		MP	A
Organics		µg/L			
Bis(2-ethylhexyl)phthalate	8 B	6.0	5	N	A
Carbon disulfide	U	5.5	1	N	A
1, 1-Dichloroethene	U	7.0	1	N	A
1, 2-Dichloroethane	U	5.0	1	MP	A
Trichloroethene	U	5.0	1	N	A

^aConstituents taken from Table 2-1 of Re-Injection Demonstration Test Plan. Constituents are those previously detected in aquifer zones 2 and 4 at concentrations above their FRL.

^bIf a duplicate sample was analyzed the highest concentration between the regular sample and duplicate sample is reported.
B = Lab qualifier(inorganic). Reported value was obtained from a reading that was less than the contract required detection limit but greater than or equal to the instrument detection limit. (Organic) Analyte also detected in an associated laboratory blank. Positive result should be considered suspect - probably the result of cross contamination in the laboratory rather than present in the actual sample.

U = Nondetect

^cFrom Table 9-4 in OU5 ROD.

^dFRL is for hexavalent chromium.

^eConstituent types from Appendix A of IEMP. MP indicates that the constituent has been identified as being able to migrate to the aquifer. N indicates that the constituent has been identified as not being able to migrate to the aquifer.

^fA - Applicable or relevant and appropriate requirement based (MCL, PMCL, etc.).

B - Based on 95th percentile background concentrations.

R - Risk-based

R* - Risk-based radionuclide cleanup levels include constituent specific 95th percentile background concentration.

TABLE 2

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RE-INJECTION WELL 22107 (IW-8)
OPERATIONAL SUMMARY SHEET
JUNE 1999

Reference Elevation (feet AMSL) - 539.92 (top of casing)
Northing Coordinate ('83) - 476196.22
Easting Coordinate ('83) - 1347978.25

Hours in reporting period^a = 719.23
Hours not injecting^b = 8
Hours injecting^c = 711.23
Operational percent^d = 98.9

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected ^e	Average Operating Injection Rate (gpm) ^f
9/98	8.16	206
10/98	5.78	203
11/98	8.47	196
12/98	5.76	222
1/99	5.35	227
2/99	7.06	196
3/99	7.34	205
4/99	7.75	197
5/99	7.46	216
6/99	8.42	197

^aFirst operational shift reading on 6/1/99 to first operational shift reading on 7/1/99

^bDowntime. System down due to an electrical storm

^cHours in reporting period - Hours not injecting

^d(Hours injecting/Hours in reporting period) x 100

^eSummation of daily totalizer differences

^fMillion Gallons Injected/(Hours Injecting x 60)

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TABLE 3

**RE-INJECTION WELL 22108 (IW-9)
OPERATIONAL SUMMARY SHEET
JUNE 1999**

Reference Elevation (feet AMSL) - 578.025 (top of casing)

Northing Coordinate ('83) - 476255.74

Easting Coordinate ('83) - 1348384.49

Hours in reporting period^a = 719.12

Target Injection Rate = 200 gpm

Hours not injecting^b = 8Hours injecting^c = 711.12Operational percent^d = 98.9

Monthly Measurements		
Month	Million Gallons Injected ^e	Average Operating Injection Rate (gpm) ^f
9/98	8.17	206
10/98	8.30	201
11/98	8.53	197
12/98	5.66	214
1/99	4.33	181
2/99	6.07	156 ^g
3/99	5.93	178 ^h
4/99	6.66	184
5/99	7.83	200
6/99	8.41	197

^aFirst operational shift reading on 6/1/99 to first operational shift reading on 7/1/99^bDowntime. System down due to an electrical storm.^cHours in reporting period - Hours not injecting^d(Hours injecting/Hours in reporting period) x 100^eSummation of daily totalizer differences^fMillion Gallons Injected/(Hours Injecting x 60)^gInjection out of smaller downcomer in February. Target Injection rate of smaller downcomer is 150 gpm.^hInjection out of smaller downcomer up until March 8. Large downcomer was used from March 11 to April 1, 1999.

TABLE 4

RE-INJECTION WELL 22109 (IW-10)
OPERATIONAL SUMMARY SHEET
JUNE 1999

-- 2509

Reference Elevation (feet AMSL) - 576.92 (top of casing)

Northing Coordinate ('83) - 476175.65

Easting Coordinate ('83) - 1348860.53

Hours in reporting period^a = 719.12

Target Injection Rate = 200 gpm

Hours not injecting^b = 8Hours injecting^c = 711.12Operational percent^d = 98.9

Monthly Measurements		
Month	Million Gallons Injected ^e	Average Operating Injection Rate (gpm) ^f
9/98	8.13	205
10/98	8.28	200
11/98	8.50	196
12/98	5.72	217
1/99	5.48	229
2/99	8.09	208
3/99	8.13	204
4/99	5.35	190
5/99	8.25	197
6/99	8.36	196

^aFirst operational shift reading on 6/1/99 to first operational shift reading on 7/1/99^bDowntime. System down due to an electrical storm^cHours in reporting period - Hours not injecting^d(Hours injecting/Hours in reporting period) x 100^eSummation of daily totalizer differences^fMillion Gallons Injected/(Hours Injecting x 60)

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TABLE 5

RE-INJECTION WELL 22240 (IW-11)
OPERATIONAL SUMMARY SHEET
JUNE 1999

Reference Elevation (feet AMSL) - 577.14 (top of casing)
Northing Coordinate ('83) - 476422.82
Easting Coordinate ('83) - 1349386.92

Hours in reporting period^a = 719.15
Hours not injecting^b = 8
Hours injecting^c = 711.15
Operational percent^d = 98.9

Target Injection Rate = 200 gpm

Monthly Measurements		
Month	Million Gallons Injected ^e	Average Operating Injection Rate (gpm) ^f
0/98	8.39	211
10/98	8.29	199
11/98	8.50	197
12/98	5.68	216
1/99	5.53	230
2/99	8.06	208
3/99	8.04	204
4/99	7.56	192
5/99	8.34	199
6/99	8.42	197

^aFirst operational shift reading on 6/1/99 to first operational shift reading on 7/1/99

^bDowntime. System down due to an electrical storm

^cHours in reporting period - Hours not injecting

^d(Hours injecting/Hours in reporting period) x 100

^eSummation of daily totalizer differences

^fMillion Gallons Injected/(Hours Injecting x 60)

TABLE 6

RE-INJECTION WELL 22111 (IW-12)
OPERATIONAL SUMMARY SHEET
JUNE 1999

-- 2509

Reference Elevation (feet AMSL) - 583.01 (top of casing)
Northing Coordinate ('83) - 476518.64
Easting Coordinate ('83) - 1350105.39

Hours in reporting period^a = 719.22

Target Injection Rate = 200 gpm

Hours not injecting^b = 8

Hours injecting^c = 711.22

Operational percent^d = 98.9

Monthly Measurements		
Month	Million Gallons Injected ^e	Average Operating Injection Rate (gpm) ^f
09/98	8.12	205
10/98	8.27	201
11/98	8.53	197
12/98	5.61	219
1/99	5.08	212
2/99	8.06	208
3/99	8.13	203
4/99	7.65	195
5/99	8.27	197
6/99	8.42	197

^aFirst operational shift reading on 6/1/99 to first operational shift reading on 7/1/99

^bDowntime. System down due to an electrical storm

^cHours in reporting period - Hours not injecting

^d(Hours injecting/Hours in reporting period) x 100

^eSummation of daily totalizer differences

^fMillion Gallons Injected/(Hours Injecting x 60)

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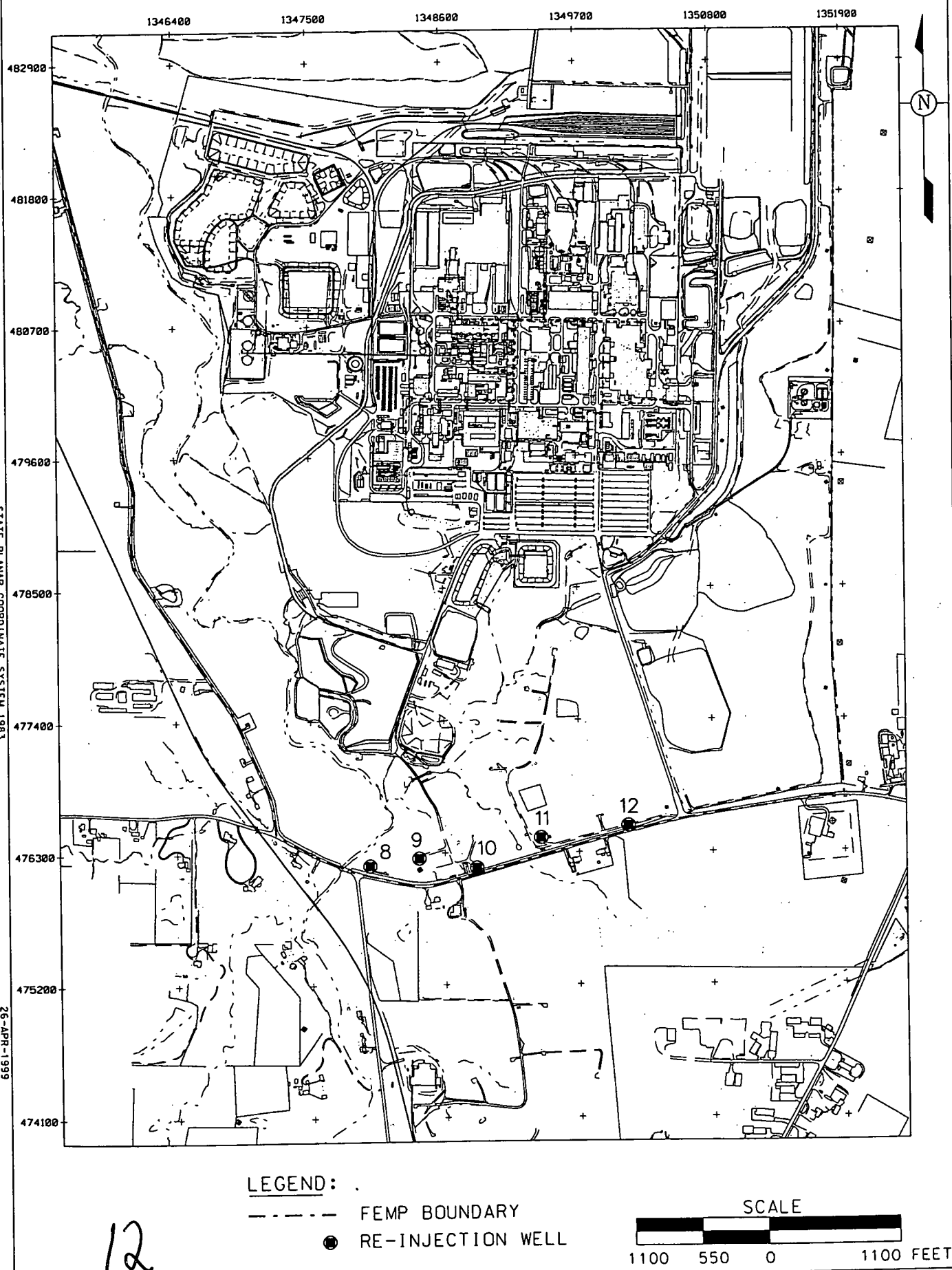
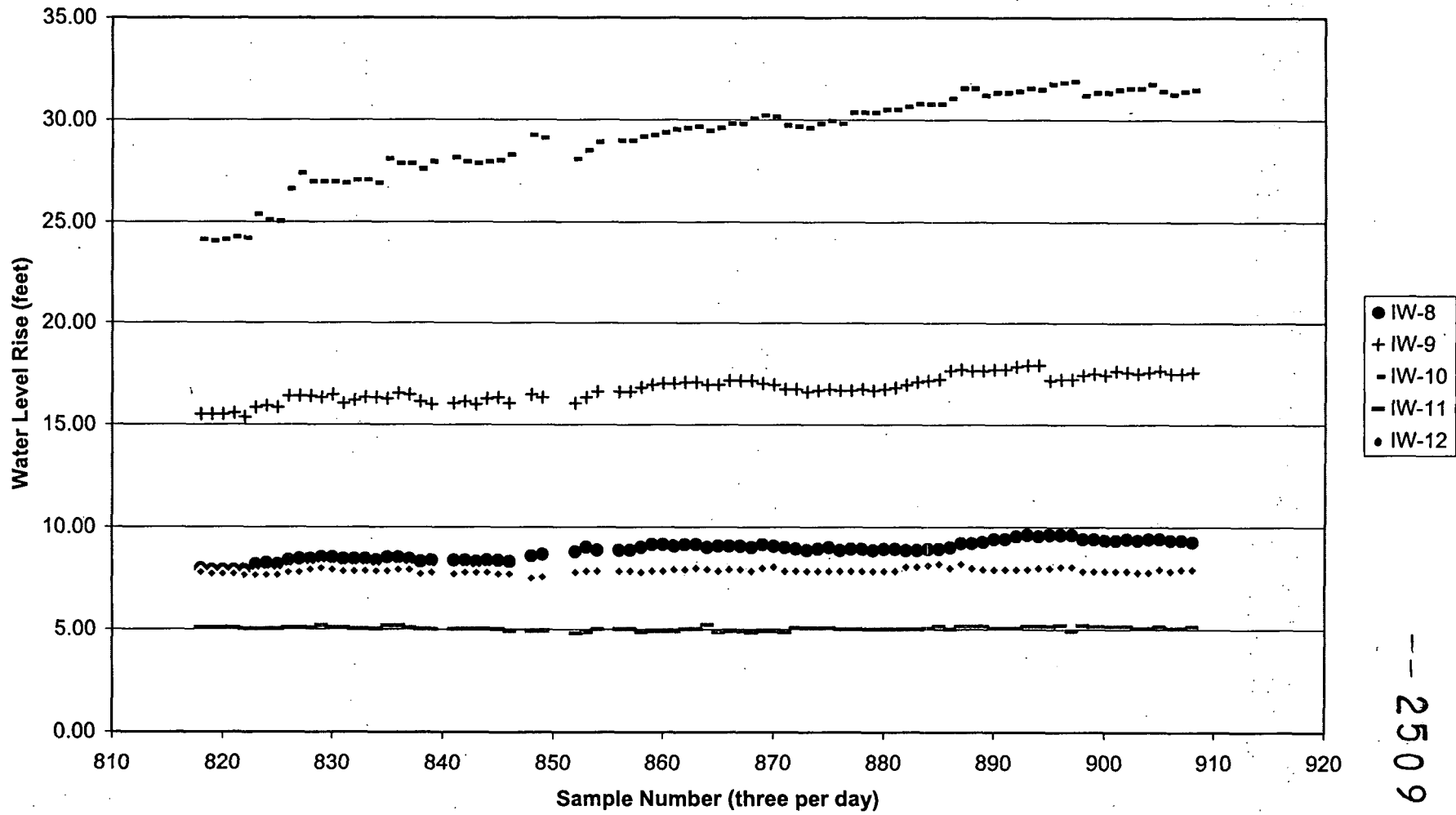


FIGURE 1. LOCATION OF RE-INJECTION WELLS

Figure 2
Re-Injection Wells, Water Level Rise
First Shift June 1, 1999 to July 1, 1999



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